

## Arenas Laboratory

**Research Interests:** *Breast cancer, Colon cancer, Experimental therapeutics*

My laboratory is interested in developing and evaluating novel therapies for solid tumors. Our research efforts are targeted towards the treatment and prevention of breast and colon cancer. Currently we are focusing on three important areas of research.

1. We have developed a liposomal gene delivery system to introduce certain tumor suppressor genes *in vivo* to prevent and treat cancer. Using this novel technique, we have successfully introduced the Adenomatous Polyposis Coli (APC) gene, an important tumor suppressor gene linked to colon cancer, into intestinal epithelium. Using a genetically engineered mouse model that develops colon tumors, our liposomal APC gene therapy is capable of preventing polyp and subsequent cancer formation. This delivery system provides a unique opportunity to study the effect of important genes in cancer development.
2. Breast cancers that lack estrogen receptors (ER) predict a worse prognosis despite our aggressive treatment efforts. One mechanism by which these tumors may develop is through the loss of function of the p53 gene, an essential tumor suppressor gene. We are studying the role of two important enzyme pathways, aromatase and cyclooxygenase, in ER-negative breast cancers by utilizing a p53-deficient mouse model that develop mammary tumors. We are evaluating the effectiveness of aromatase and cyclooxygenase inhibitors to prevent and treat this aggressive form of breast cancer.
3. Cholesterol-lowering agents or statins are important towards preventing heart disease and stroke. Through essential collaborations with the Department of Biochemistry at the University of Massachusetts Amherst, we are studying important pathways by which statins may prevent colon and breast cancers through changes in the lipid profile of the epithelial cell membrane.

### Selected Publications

McCall JL, Pasini AK, Mustafa IA, **Arenas RB** and Wait RB. 2002. Investigating Screening Noncompliance for Breast Cancer Using a Geographic Information System (GIS). *Journal of Clinical Oncology*: 21:2970, 2002.

Mertens WC, Hilbert V, Katz D, **Arenas RB**, Makari-Judson G,. Is Hormone-replacement Therapy (HRT) a Plausible Explanation for the Recent Increase in Large Breast Tumor Incidence? *Journal of Clinical Oncology*. 22 (14S): 9659, 2004.

Lew, J. I., Guo, Y., Kim, R., Vargish, L., Michelassi, M. and **Arenas, R. B.** Reduction of intestinal neoplasia by APC gene replacement and COX-2 inhibition is additive. *Journal of Surgery of the Alimentary Tract*. 6: 563-68, 2002.

### Professional Highlights

1994, Young Investigator's Award, American Society of Clinical Oncology  
1998 Charles Huggins Faculty Research Award, University of Chicago  
2002 Faculty Teaching Award, Baystate Medical Center



**Richard B. Arenas, MD**

Chief of Surgical Oncology, Baystate Medical Center Investigator, Pioneer Valley Life Sciences Institute

Adjunct Assistant Professor, Biology, University of Massachusetts Amherst

### Education

B.A., Chemistry, Washington University

M.D., Medicine, Robert Wood Johnson Medical School

### Postdoctoral

Surgery Resident, Hospital of Saint Raphael, 1986-1989.

Surgery Resident, New Jersey Medical School, 1989-1991.

Surgical Oncology Fellow, The University of Chicago, 1991-1994.

### Contact Information

**Richard B. Arenas, MD**

3601 Main Street

Springfield, MA 01199

Phone: (413) 794-0653

Fax: (413) 794-0857

richard.arenas@bhs.org